Chronic Wasting Disease Funding

CWD is typified by chronic weight loss leading to death. No known relationship exists between CWD and any other TSE of animals or people.

In the mid-1980s, CWD was detected in free-ranging deer and elk in contiguous portions of northeastern Colorado and southeastern Wyoming. In May 2001, CWD was found in free-ranging deer in the southwestern corner of Nebraska (adjacent to Colorado and Wyoming). This limited area within the three States is defined as the endemic area.

Soon after diagnosis of the disease as a TSE, Colorado and Wyoming wildlife management agencies stopped the movement of deer and elk from their research facilities. Wild cervids have never been translocated from the endemic area.

CWD also has been diagnosed in farmed elk herds in a number of States. The first positive farmed herd in the United States was detected in 1997 in South Dakota. Since then, 16 additional positive herds have been found: South Dakota (6), Nebraska (3), Oklahoma (1), Montana (1), and Colorado (5). As of October 2001, 6 of these 17 positive herds remain under State quarantine. Ten of the herds have been depopulated or have been slaughtered and tested. The quarantine has been lifted from one herd that underwent rigorous surveillance and showed no further evidence of disease. Quarantine and tracing of animals from these herds are performed by the States where the herds are located.

CWD also has been found in farmed elk and free-ranging mule deer in the Canadian province of Saskatchewan. For more information on CWD in Canada visit the Canadian Food Inspection Agency Web site at www.inspection.gc.ca/english/anima/heasan/disemala/cwdmdce.shtml

Species affected with CWD include Rocky Mountain elk, mule deer, white-tailed deer, and black-tailed deer. Other ruminant species, including wild ruminants and domestic cattle, sheep, and goats, have been housed in wildlife facilities in direct or indirect contact with CWD-affected deer and elk with no evidence of disease transmission. Researchers are continuing to explore the possibility of transmission of CWD to other species.

Causative Agent

The agent responsible for CWD (and other animal TSEs, such as scrapie and bovine spongiform encephalopathy) has not been completely characterized. Three main theories exist about the nature of the agent that causes CWD: (1) the agent is a prion, an abnormal form of a normal protein, known as cellular prion protein, most commonly found in the central nervous system. The abnormal prion protein "infects" the host animal by promoting conversion of normal cellular prion protein to the abnormal form; (2) the agent is an unconventional virus; (3) the agent is a virino or "incomplete" virus composed of nucleic acid protected by host proteins. The CWD agent is smaller than most viral particles and does not evoke any detectable immune response or inflammatory reaction in the host animal. Based on experience with other TSE agents, the CWD agent is assumed to be resistant to enzymes and chemicals that normally break down proteins, as well as resistant to heat and normal disinfection procedures.

Clinical Signs

Most cases of CWD occur in adult animals. The disease is progressive and always fatal. The most obvious and consistent clinical sign of CWD is weight loss over time. Behavioral changes also occur in the majority of cases, including decreased interactions with other animals, listlessness, lowering of the head, blank facial expression, and repetitive walking in set patterns. In elk, behavioral changes may also include hyperexcitability and nervousness. Affected animals continue to eat grain but may show decreased interest in hay. Excessive salivation and grinding of the teeth are observed as well as an increase in urination.

Diagnosis

Researchers are working to develop live-animal diagnostic tests for CWD. Currently, definitive diagnosis is based on postmortem examination (necropsy) and testing. Gross lesions seen at necropsy reflect the clinical signs of CWD, primarily emaciation. Aspiration pneumonia, which may be the actual cause of death, also is a common finding in animals affected with CWD. On microscopic examination, lesions of CWD in the central nervous system resemble those of other TSEs. In addition, scientists use a technique called immunohistochemistry to test brain tissue for the presence of the abnormal prion protein to diagnose CWD.

Epidemiology

The origin and mode of transmission of CWD are unknown. Animals born in captivity and those born in the wild have been affected with the disease. Based on epidemiology, transmission of CWD is thought to be lateral or from animal to animal; although maternal transmission may occur, it appears to be relatively unimportant in maintaining epidemics.

Surveillance

Surveillance for CWD in free-ranging deer and elk in Colorado and Wyoming has been ongoing since 1983, and to date, has confirmed the limits of the endemic areas in those States. CWD in free-ranging deer in Nebraska was detected in 2001; more intensive surveillance to better define the prevalence and distribution of the disease in free-ranging deer in Nebraska is underway. In addition, an extensive nationwide surveillance effort was started in 1997-98 to better define the geographic distribution of CWD in free-ranging cervids in the United States. This surveillance effort is a two-pronged approach consisting of cooperation between hunters and the States to conduct cervid surveys, as well as surveillance throughout the entire country targeting deer and elk exhibiting clinical signs suggestive of CWD. Over 15,000 samples from hunted free-ranging deer and elk have been tested to date, including over 8,000 animals from outside the endemic area. In the United States no CWD-positive free-ranging animals have been found outside the endemic area.

Surveillance for CWD in farmed elk began in 1997 and has been a cooperative effort involving State agriculture and wildlife agencies and the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS). As of the end of July 2001, over 3,500 farmed cervids have been tested. Farmed cervid surveillance has been increasing each year since 1997 and will be an integral part of the USDA program to eliminate CWD from farmed elk.

Management

Colorado and Wyoming wildlife management agencies and USDA are continuing to invest resources in CWD research efforts. In addition, the Colorado Division of Wildlife is currently developing and implementing a management plan for CWD in free-ranging cervids. APHIS has provided assistance to State officials in diagnosing CWD and in monitoring international and interstate movements of animals to help prevent further spread of CWD.

Also, APHIS is developing a program to eliminate CWD from farmed elk with the support of the States and the farmed elk industry. The provisions of this program will include fencing requirements, animal identification and herd inventory, surveillance of deaths of animals over 16 months of age, and herd certification with increase in status (less movement restrictions) based on the number of years of surveillance without evidence of disease. Any herd additions will have to be from herds with the same or greater status. Positive animals will be identified by use of an approved test performed by APHIS' National Veterinary Services Laboratory (NVSL) or an NVSL-approved laboratory.

Under the USDA program, positive herds would be depopulated or quarantined. Trace-forward animals would be subject to removal/euthanasia from the trace forward herd with postmortem testing or quarantine of the entire herd with surveillance. Trace-back herds would be quarantined. Trace-back or trace-forward herds in which a positive animal is identified would be treated as positive herds.

USDA plans to implement this program by FY 2003. In the interim, many State animal health regulatory agencies have instituted CWD surveillance or certification programs for farmed elk in their States; many of these programs are based on the same model proposed for the USDA program.

All of these agencies are committed to limiting the distribution of the disease in free-ranging deer and elk to the current localized area and decreasing its occurrence in both the free-ranging and farmed deer and elk populations.

Commodity Credit Corporation Funds and the Declaration of Emergency

The Secretary of Agriculture has authorized the transfer of $2.6 million from the Commodity Credit Corporation (CCC) to enhance CWD surveillance and to purchase and euthanize animals from CWD-positive herds during FY 2001 and FY 2002. CCC funds are designed for use in situations that need to be addressed as quickly as possible to limit the impact on animal health and agriculture industries (i.e. emergencies). A declaration of a CWD emergency authorizing this transfer was posted in the Sept. 27, 2001, *Federal Register*. The declaration of emergency is simply part of the process by which these funds are transferred and does not mean that the United States is facing an extraordinary animal disease event. Similar declarations of emergency were recently made for the transfer of CCC funds to address scrapie, pseudorabies, and bovine tuberculosis.

Additional Information

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